CVEN9451, CVEN9452, CVEN9453

Masters Project A

Term 1, 2023

Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Asal Bidarmaghz	a.bidarmaghz@unsw.edu.au	by e-mail/MS teams request	CE502	

School Contact Information

Engineering Student Support Services – The Nucleus - enrolment, progression checks, clash requests, course issues or program-related queries

Engineering Industrial Training – Industrial training questions

UNSW Study Abroad – study abroad student enquiries (for inbound students)

UNSW Exchange – student exchange enquiries (for inbound students)

UNSW Future Students – potential student enquiries e.g. admissions, fees, programs, credit transfer

Phone

(+61 2) 9385 8500 – Nucleus Student Hub

(+61 2) 9385 7661 – Engineering Industrial Training

(+61 2) 9385 3179 – UNSW Study Abroad and UNSW Exchange (for inbound students)

Course Details

Units of Credit 4

Summary of the Course

The project provides an opportunity for you to bring together engineering principles learned over your previous years of study and apply these principles to innovatively solve problems such as the development of a specific design, process and/or the investigation of a hypothesis. Master projects are complex, open-ended problems that allow room for your creativity, and the acquisition, analysis and interpretation of results. There are multiple possible solutions or conclusions at the outset and sufficient complexity to require a degree of project planning. The project requires you to formulate problems in scientific or engineering terms, manage an technical project and find solutions by applying scientific and engineering methods. You will also develop the ability to work in a research and development environment. You must identify a supervisor and project prior to enrolling in this course. This is the first course of the 3 course project structure.

Course Aims

The thesis provides an opportunity for the student to bring together engineering principles learned over their previous years of study and apply these principles to innovatively solve problems such as the development of a specific design, process and/or the investigation of a hypothesis. Thesis projects must be complex, open-ended problems that allow room for student creativity, and the acquisition, analysis and interpretation of results. There must be multiple possible solutions or conclusions at the outset and sufficient complexity to require a degree of project planning from the student. The thesis requires the student to formulate problems in engineering terms, manage an engineering project and find solutions by applying engineering methods. Students also develop their ability to work in a research and development environment.

Course Learning Outcomes

After successfully completing this course, you should be able to:

Learning Outcome	EA Stage 1 Competencies
1. Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.	PE1.3, PE1.4, PE1.5, PE2.3, PE2.4, PE3.1, PE3.3
2. Critically reflect on a specialist body of knowledge related to their thesis topic.	PE1.4, PE3.4
3. Apply scientific and engineering methods to solve the chosen engineering problem.	PE2.1, PE2.2, PE3.4
4. Analyse collected data objectively using mathematical methods to provide conclusions for the chosen design problem, and recommend solutions or future directions.	PE1.1, PE1.2, PE2.1, PE2.2
5. Demonstrate oral and written communication in professional and lay domains.	PE3.2, PE3.5

The Masters Coursework Thesis aims to provide students with the opportunity to: • Undertake and execute an academic research project; • Produce a self-contained research thesis, which may be understood and used by others with technical background knowledge in the same discipline area as the thesis topic, and may potentially be suitable for publication; OBJECTIVES • Present their research in a seminar or a video presentation.

Teaching Strategies

The course is taught as an individual research project, to develop a level of research skills and autonomy.

Additional Course Information

This course is in three parts. Masters Project A is undertaken in the first term of enrolment. Masters Project A is a prerequisite for Masters Project B and Masters Project B is a prerequisite for Masters Project C.

By default, students must ordinarily take Masters Project A, B and C in each consecutive term.

With School permission, students may request to take Masters Project A in one term then Masters Project B + C concurrently in the following term. This option is strictly limited only to students who can demonstrate the ability to progress. Further details are provided in the ASSESSMENTS section below.

Students may enrol in up to and including 20 UoC while undertaking Masters Project without being considered as overloading. Students who enrol in 22 UoC or more while undertaking Project are considered to be overloading and will require permission to do so.

Where can I find more information?

Find more information about the structure of the Masters Project on the School website here: http://intranet.civeng.unsw.edu.au/info-about/student-intranet/honours

PROCEDURE FOR SELECTION OF A RESEARCH TOPIC

Your priority is to find a Supervisor and agree on a topic BEFORE ENROLLING in Masters Project A.
- Browse online ('search projects') the selection of available topics and identify potential supervisors http://intranet.civeng.unsw.edu.au/info-about/student-intranet/honours

Note: It is unlikely that this list is fully up-to-date and comprehensive. It is essential that during the Term prior to enrolment in Masters Project A that individual students approach School teaching staff in area(s) of potential interest, to explore the range of possible thesis topics that may be available.

- Discuss your selection with potential topic supervisors.
- Once you have a Supervisor and topic, you will need to download, complete and sign (both you and your Supervisor) a Masters Project Form, enrol yourself on myUNSW then upload the signed form to the Student Intranet here: http://intranet.civeng.unsw.edu.au/info-about/studentintranet/submit-thesis-application-form
- Please note that you will only be able to complete course enrollment for CVEN9451. The School will complete your class registration once you've submitted your topic nomination form to the Student Intranet

Please note that If you cannot find a Masters Project Supervisor by the start of Term A, then you will not be allowed to enrol/continue in the course and it will be automatically dropped from your enrolments. If you are enrolled in program 8621, you may select CVEN9050 Masters Practice Project A for which an individual supervisor is not required. If you are enrolled in program 8338 and have completed a thesis in your Undergraduate degree, you may be eligible for thesis exemption. Please contact Student Services at the Nucleus for more information.

WHY WRITE A Masters Project?

Satisfy your intellectual curiosity

This is the most compelling reason to write a Masters Project. You have studied courses during your degree that perhaps really piqued your interest. Now's your chance to follow your passions, explore further, and contribute some original ideas and research in your field.

Develop transferable research skills

Whether you choose to pursue further research (e.g. complete a Ph.D.) or not, the process of developing and crafting a feasible research project will polish skills that will serve you well in almost any future job. After all, most jobs require some form of problem-solving and oral and written communication. Writing a Masters thesis requires that you:

- ask smart questions
- acquire the investigative instincts needed to find answers
- navigate libraries, laboratories, archives, databases, and other research venues
- develop the flexibility to redirect your research if your initial plan flops
- master the art of time management
- sharpen your argumentation skills
- organize a lengthy piece of writing
- polish your oral communication skills by presenting and defending your research to academic
- staff and students

Work closely with academic staff

At large research universities like UNSW, you have likely taken classes where you barely got to know your lecturer. Writing a thesis offers the opportunity to work one-on-one with an academic supervisor. Such relationships can enrich your intellectual development and later serve as invaluable references for postgraduate degrees and employment.

Open windows into future professions

A Masters Project will give you a taste of what it's like to do research in your field. It also might help you decide whether to pursue that field in your future career.

Assessment

Assessment 1 consists of two parts: Component A1 and Component A2:

• Component A1 submission should include: Statement of the Problem and draft Literature Review.
• Component A2 submission should include: More detailed, revised and improved Introduction (Statement of the problem), Literature Review.

1. Component A1 is due: WEEK 7 **(mark: satisfactory/unsatisfactory)**
2. Component A2 is due: WEEK 10 Submissions A1 & A2 must be provided to the supervisor by 4.00pm Friday of the submission week. **(mark: 10% of final mark)**

NOTE: If students are seeking to apply for permission to enroll concurrently in Masters Project B + C in the following Term, then the additional requirement is that the A2 submission must also include a Thesis Outline (Chapters and indicative sub-headings) plus a description of Research Methodology.

In the event of an unsatisfactory assessment in Masters Project A, a student must submit a show cause. A plan of future action to improve student performance must be prepared and agreed upon by both the supervisor and course coordinator before progress to Masters Project B is allowed. Failure to receive the progress assessment by the due date will result in the student results being withheld and/or failure.

PROCEDURE FOR SEEKING APPROVAL TO ENROL IN Masters Project B + C CONCURRENTLY

With Supervisor and School approval, students who demonstrate accelerated progress during Masters Project A may be permitted to enrol in a 4+8 UoC structure, where Masters Project B and C are both taken in the same term after Masters Project A. Students should submit their request to undertake Masters Project B+C (concurrent) at the same time that they submit their extended Component A2 submission (see the ASSESSMENTS section above for the additional content to be included). The Course Coordinator will email all students closer to this date with detailed instructions on how to do this.

It is strongly recommended that you discuss with your supervisor, prior to submitting your formal request for approval. Once your application for concurrent B+C is received, your supervisor will be asked to approve or decline this request (again, you will receive an email outlining how to do so closer to the date).

Students who do not demonstrate sufficient progress during Masters Project A may be instructed to change enrolment and complete Masters Project C in a third term after Masters Project B.

FAIL/LATE PENALTIES AND PROCEDURES

Fail in Masters Project A – must re-enrol in Masters Project A again

Late Procedure –Applications for late submission can be applied for BEFORE the due date. This is at the discretion of the Thesis Coordinator, but should only be granted in exceptional circumstances. As per normal, students can also apply through myUNSW for special consideration.

For components A1 and A2 – zero (0) mark is awarded

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Master Thesis A	10%	Not Applicable	1, 4, 5
2. Master Thesis B	5%	Not Applicable	1, 4, 5
3. Master Thesis C	85%	Not Applicable	1, 4, 5

Assessment 1: Master Thesis A

Component A1 submission should include: Statement of the Problem and draft Literature Review.
Component A2 submission should include: More detailed, revised and improved Introduction (Statement of the problem), Literature Review.

Component A1 is due: WEEK 7
Component A2 is due: WEEK 10
Submissions A1 & A2 must be provided to the supervisor by 4.00pm Friday of the submission week

Assessment 2: Master Thesis B

Component B1 submission: Progress Report – this will take the form of an improved and extended A2 submission, including a detailed Thesis Outline (chapter and sub-headings), Research Methodology and preliminary Results and Analyses.

Component B1 is due: WEEK 3 for students enrolled in Research Thesis B+C concurrently WEEK 8 for students enrolled in Research Thesis B only
Submission B1 must be provided to the supervisor by 4.00pm on Friday of the submission week.

Assessment criteria

Component B1 submission: Progress Report – this will take the form of an improved and extended A2 submission, including a detailed Thesis Outline (chapter and sub-headings), Research Methodology and preliminary Results and Analyses.

Lunchtime Workshop: Thesis Writing Workshop (Week 3)

Component B1 is due: WEEK 3 for students enrolled in Research Thesis B+C concurrently WEEK 8 for students enrolled in Research Thesis B only Submission B1 must be provided to the supervisor by 4.00pm on Friday of the submission week.

Assessment 3: Master Thesis C

Seminar Abstract Week 7, 5% of Final Mark.

Research Seminar/Video Presentation Week 10, 10% of Final Mark.

Thesis Submission Week 11, 70% of Final Mark.

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

Course Schedule

View class timetable

Timetable

Date	Type	Content
Week 1: 13 February - 17 February	Project	Confirm Thesis Topic and Enrolment
Week 2: 20 February - 24 February	Workshop	Literature Review & Problem Statement Workshop (Thesis A students) Date and time: Thurs 23/02/2023 at 12 – 1 pm Venue: C501, Building H20 *** **THIS IS AN IN-PERSON WORKSHOP AND ALL STUDENTS ARE EXPECTED TO ATTEND** ****
Week 3: 27 February - 3 March	Project	Work on statement of the problem and literature review with supervisor
	Workshop	Research Thesis B Workshop: How to write a Thesis (For Thesis B studetns) Thursday 3rd March 12pm to 13pm CE501, H20 Building *** **THIS IS AN IN-PERSON WORKSHOP AND ALL STUDENTS ARE EXPECTED TO ATTEND** ****
	Assessment	Component B1 is due: WEEK 3 for students enrolled in Research Thesis B+C concurrently (for Thesis B studetns).
Week 4: 6 March - 10 March	Project	Work on statement of the problem and literature review with supervisor
Week 5: 13 March - 17 March	Project	Prepare draft for Component A1
	Project	Work on Statement of the Problem and Literature

		Review with supervisor
Week 6: 20 March - 24 March	Project	Work on Statement of the Problem and Literature Review with supervisor
Week 7: 27 March - 31 March	Project	Finalise and submit Statement of the Problem and Literature Review to supervisor(s)
	Assessment	Component A1 Due – submit to your supervisor by 4.00 pm on Friday
	Assessment	Thesis C students: Seminar Abstract Week 7, 5% of Final Mark
Week 8: 3 April - 7 April	Assessment	Receive review of Component A1 from supervisor(s) Revise Statement of the Problem and Literature Review. Consult on your proposed Research Methodology with supervisor.
	Project	WEEK 8 for students enrolled in Research Thesis B only. Submission B1 must be provided to the supervisor by 4.00pm on Friday of the submission week.
Week 9: 10 April - 14 April	Project	Complete additional student health and safety training (Thesis A students) Revise Statement of the Problem and Literature Review and prepare draft project skeleton. Consult on your proposed Research Methodology with supervisor.
Week 10: 17 April - 21 April	Project	Finalise Research Plan and Methodology for Thesis B with supervisor
	Assessment	Component A2 Due – submit to your supervisor by 4.00 pm on Friday. NOTE: If students are seeking to apply for permission to enrol concurrently in ResearchThesis B + C in the following Term, then the additional requirements are that the A2 submission must also include a Thesis Outline (Chapters and indicative sub-headings) plus a 1 – 2 page description of Research Methodology, sufficient to indicate clear understanding of the nature and

		extent of the work required.
	Assessment	Thesis C studetns: Research Seminar/Video Presentation, Week 10, 10% of Final Mark

Resources

Prescribed Resources

The online reference provided below is directed at final year Honours undergraduate students. However, for all practical purposes, there are many similarities in the academic expectations of Honours and Masters by Coursework theses. Furthermore, students are encouraged to utilise the excellent resources at the UNSW Learning Centre during their thesis research.

- Honours Thesis Writing for Engineering and Science Students: https://student.unsw.edu.au/honours-thesis-writing-engineering-and-science-students
- UNSW Learning Centre: https://student.unsw.edu.au/individual-consultations-academic-support
- Online iWrite thesis writing tutorial: http://iwrite.sydney.edu.au/tutorials/start/starthere.htm

Recommended Resources

Additional material to use:

• Topic material as directed by your supervisor.
• Materials provided by course coordinator.

Course Evaluation and Development

Feedback from students in welcomed, and is used to continuously improve the course outcomes and experiences for students.

Laboratory Workshop Information

To be discussed with supervisor(s).

Submission of Assessment Tasks

Please refer to the Moodle page of the course for further guidance on assessment submission.

UNSW has a standard late submission penalty of:

- 5% per day, for all assessments where a penalty applies, capped at five days (120 hours), after which a student cannot submit an assessment, and no permitted variation.

Academic Honesty and Plagiarism

Beware! An assignment that includes plagiarised material will receive a 0% Fail, and students who plagiarise may fail the course. Students who plagiarise are also liable to disciplinary action, including exclusion from enrolment.

Plagiarism is the use of another person's work or ideas as if they were your own. When it is necessary or desirable to use other people's material you should adequately acknowledge whose words or ideas they are and where you found them (giving the complete reference details, including page number(s)). The Learning Centre provides further information on what constitutes Plagiarism at:

https://student.unsw.edu.au/plagiarism

Academic Information

Final Examinations:

Final Exams in T1 2023 will be held on campus between the 28th of April and the11th of May, and Supplementary Exams between the 22nd of May and the 26th of May. You are required to be available on these dates. Please do not to make any personal or travel arrangements during this period.

ACADEMIC ADVICE

- Key Staff to Contact for Academic Advice (log in with your zID and password): https://intranet.civeng.unsw.edu.au/key-staff-to-contact-during-your-studies-at-unsw
- Key UNSW Dates - eg. Census Date, exam dates, last day to drop a course without academic/financial liability etc.
- CVEN Student Intranet (log in with your zID and password): https://intranet.civeng.unsw.edu.au/student-intranet
- Student Life at CVEN, including Student Societies: https://www.unsw.edu.au/engineering/civil-and-environmental-engineering/student-life
- Special Consideration: https://student.unsw.edu.au/special-consideration
- General and Program-Specific Questions: The Nucleus: Student Hub
- Book an Academic Advising session: https://unswengacademicadvising.as.me/schedule.php

Disclaimer

This course outline sets out description of classes at the date the Course Outline is published. The nature of classes may change during the Term after the Course Outline is published. Moodle should be consulted for the up to date class descriptions. If there is any inconsistency in the description of activities between the University timetable and the Course Outline (as updated in Moodle), the description in the Course Outline/Moodle applies.

Image Credit

Mike Gal.

CRICOS

CRICOS Provider Code: 00098G

Acknowledgement of Country

We acknowledge the Bedegal people who are the traditional custodians of the lands on which UNSW Kensington campus is located.

Appendix: Engineers Australia (EA) Professional Engineer Competency Standard

Program Intended Learning Outcomes	
Knowledge and skill base	
PE1.1 Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline	✓
PE1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline	✓
PE1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline	✓
PE1.4 Discernment of knowledge development and research directions within the engineering discipline	✓
PE1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline	✓
PE1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline	
Engineering application ability	
PE2.1 Application of established engineering methods to complex engineering problem solving	✓
PE2.2 Fluent application of engineering techniques, tools and resources	✓
PE2.3 Application of systematic engineering synthesis and design processes	✓
PE2.4 Application of systematic approaches to the conduct and management of engineering projects	✓
Professional and personal attributes	
PE3.1 Ethical conduct and professional accountability	✓
PE3.2 Effective oral and written communication in professional and lay domains	✓
PE3.3 Creative, innovative and pro-active demeanour	✓
PE3.4 Professional use and management of information	✓
PE3.5 Orderly management of self, and professional conduct	✓
PE3.6 Effective team membership and team leadership	